THAT WHICH IS CLAIMED IS:

1. A method of operating an entity of a communications system, the entity operative to communicate with at least one other entity of the communications system via a communications medium, the method comprising:

transmitting a segment from the entity, the segment conforming to a segment format comprising a data portion and a header portion comprising a field for a sequence number associated with data in the data portion, wherein the header portion of the transmitted segment includes a segment transmission sequence number.

2. A method according to Claim 1, wherein, according to the segment format, the field for a sequence number associated with data in the data portion comprises a field for a sequence number of a data byte in the data portion.

3. A method according to Claim 1, wherein the header portion of the segment format further comprises an Urgent Pointer field, and wherein the Urgent Pointer field of the header portion of the transmitted segment includes the segment transmission sequence number.

4. A method according to Claim 3, further comprising including the segment transmission sequence number in the Urgent Pointer field of the header of the transmitted segment responsive to an absence of urgent data in the data portion of the transmitted segment.

5. A method according to Claim 1:

wherein transmitting a segment from the entity comprises transmitting a first segment from the entity, the first segment conforming to the segment format and comprising a segment transmission sequence number in a predefined field of its header portion; and

wherein the method further comprises transmitting a second segment from the entity, the second segment conforming to the segment format and comprising information other than a segment transmission sequence number in the predefined field of its header portion.

6. A method according to Claim 1:

wherein the header portion of the segment format further comprises an Urgent Pointer field;

wherein transmitting a segment from the entity comprises transmitting a first segment from the entity, the first segment conforming to the segment format and comprising a header portion comprising a first segment transmission sequence number in its Urgent Pointer field; and

wherein the method further comprises transmitting a second segment from the entity, the second segment conforming to the segment format and comprising a second header portion comprising a value in its Urgent Pointer field that identifies urgent data in a data portion of the second segment.

7. A method according to Claim 1, further comprising:

receiving an acknowledgment of the transmitted segment at the entity; and

determining a round trip time responsive to the transmission of the segment and the receipt of the acknowledgment.

8. A method according to Claim 7:

wherein transmitting a segment from the entity comprises transmitting a first segment from the entity, the first segment conforming to the segment format and comprising a first segment transmission sequence number in its header portion;

wherein receiving an acknowledgment at the entity comprises receiving a second segment at the entity, the second segment conforming to the segment format and comprising a segment transmission sequence number in its header portion; and

wherein determining a round trip time responsive to the transmission of the segment and the receipt of the acknowledgment comprises determining the round trip time responsive to the transmission of the first segment and the receipt of the second segment.

9. A method according to Claim 8, further comprising:

determining a time of transmission of the first segment;

determining a time of reception of the second segment; and

wherein determining the round trip time responsive to the transmission of the first segment and the receipt of the second segment comprises determining the round trip time from the determined time of transmission and the determined time of reception.

10. A method according to Claim 7, further comprising adjusting a retransmission timing based on the determined round trip time.

11. A method according to Claim 1:

receiving a first segment at the entity, the first segment conforming to the segment format and comprising a segment transmission sequence number in a predefined field of its header portion;

receiving a second segment at the entity, the second segment conforming to the segment format and comprising information other than a segment transmission sequence number in the predefined field of its header portion;

determining a round trip time according to a first procedure responsive to receipt of the first segment; and

determining a round trip time according to a second procedure responsive to the receipt of the second segment.

12. A method according to Claim 1, wherein transmitting a segment from the entity comprises transmitting the segment in one of a wireless communications medium, a wireline communications medium, and an optical communications medium.

13. A method of operating an entity of a communications system, the entity operative to communicate with at least one other entity of the communications system via a communications medium, the method comprising:

receiving a segment at the entity, the segment conforming to a segment format comprising a data portion and a header portion comprising a field for a sequence number associated with data in the data portion, wherein the header portion of the received segment includes a segment transmission sequence number; and

transmitting an acknowledgment reflecting the segment transmission sequence number of the received segment from the entity.

14. A method according to Claim 13, wherein transmitting an acknowledgment reflecting the segment transmission sequence number of the received segment from the entity comprises transmitting a segment conforming to the segment format and including a segment transmission sequence number in its header portion.

15. A method according to Claim 14, wherein the transmitted segment includes the same segment transmission sequence number as the received segment.

16. A method according to Claim 13, wherein, according to the segment format, the field for a sequence number associated with data in the data portion comprises a field for a sequence number of a data byte in the data portion.

17. A method according to Claim 13, wherein the header portion of the segment format further comprises an Urgent Pointer field, and wherein the Urgent Pointer field of the header portion of the received segment includes the segment transmission sequence number.

18. A method according to Claim 13, wherein receiving a segment at the entity comprises receiving the segment from one of a wireless communications medium, a wireline communications medium and an optical communication medium, and transmitting an acknowledgment reflecting the segment transmission sequence number of the received segment from the entity comprises transmitting the acknowledgment in the one of the wireless communications medium, the wireline communications medium and the optical communications medium.

19. A method of formatting TCP segments, the method comprising:

including segment transmission sequence numbers in header portions of the segments.

20. A method according to Claim 19, wherein including segment transmission sequence numbers in header portions of the segments comprises including segment transmission sequence numbers in predefined field of header portions of first segments and including information other than segment transmission sequence numbers in the predefined fields of header portions of second segments.

21. A method according to Claim 20, further comprising determining a round trip time according to respective first and second different procedures responsive to receipt of the first and second segments.

22. A method according to Claim 20, wherein including segment transmission sequence numbers in header portions of the segments comprises including a segment transmission sequence number in an Urgent Pointer field of a segment.

23. A method according to Claim 22, wherein including a segment transmission sequence number in an Urgent Pointer field of a segment comprises including a segment transmission sequence number in an Urgent Pointer field of the segment responsive to an absence of urgent data.

24. A method according to Claim 19, further comprising determining a round trip time responsive to receipt of a segment transmission sequence number.

25. A method according to Claim 24, further comprising adjusting a retransmission timing based on the determined round trip time.

26. A communications data structure embodied in a physical medium, the communications data structure comprising:

a segment comprising a data portion and a header portion comprising a field for a sequence number associated with data in the data portion, wherein the header portion of the segment includes a segment transmission sequence number.

27. A communications data structure according to Claim 26, wherein the header portion of the segment further comprises an Urgent Pointer field including the segment transmission sequence number.

28. A communications data structure according to Claim 26, embodied in one of a wireless communications medium, a wireline communications medium, an optical communications medium, and a storage medium.

29. An apparatus, comprising:

a circuit configured to construct a segment conforming to a segment format comprising a data portion and a header portion comprising a field for a sequence number associated with data in the data portion, wherein the header portion of the segment includes a segment transmission sequence number.

30. An apparatus according to Claim 29, wherein, according to the segment format, the field for a sequence number associated with data in the data portion comprises a field for a sequence number of a data byte in the data portion.

31. An apparatus according to Claim 29, wherein the header portion of the segment format further comprises an Urgent Pointer field, and wherein the Urgent Pointer field of the header portion of the segment includes the segment transmission sequence number.

32. An apparatus according to Claim 31, wherein the circuit is further operative to include the segment transmission sequence number in the Urgent Pointer

field of the header of the segment responsive to an absence of urgent data in the data portion of the segment.

33. An apparatus according to Claim 29, wherein the circuit is operative to construct a first segment conforming to the segment format and comprising a segment transmission sequence number in a predefined field of its header and to construct a second segment conforming to the segment format and comprising information other than a segment transmission sequence number in the predefined field of its header.

34. An apparatus according to Claim 29:

wherein the header portion of the segment format further comprises an Urgent Pointer field;

wherein the circuit is operative to construct a first segment conforming to the segment format and comprising a first header portion comprising a first segment transmission sequence number in its Urgent Pointer field and to construct a second segment conforming to the segment format and comprising a second header portion comprising a value in its Urgent Pointer field that identifies urgent data in a data portion of the second segment.

35. An apparatus according to Claim 29, wherein the circuit is further operative to receive an acknowledgment reflecting the segment transmission sequence number of the constructed segment and to determine a round trip time responsive to receipt of the acknowledgment.

36. An apparatus according to Claim 35, wherein the circuit is operative to receive a segment conforming to the segment format and comprising a segment transmission sequence number in its header portion, and to determine the round trip time responsive to receipt of the segment.

37. An apparatus according to Claim 35, wherein the circuit is further operative to adjust a retransmission timing based on the determined round trip time.

38. An apparatus according to Claim 35, wherein the circuit is operative to receive a first segment conforming to the segment format and comprising a segment transmission sequence number in a predefined field of its header portion and to receive a second segment conforming to the segment format and comprising information other than a segment transmission sequence number in the predefined field of its header portion and to determine round trip time according to respective first and second procedures responsive to receipt of respective ones of the first and second segments.

39. An apparatus according to Claim 29, wherein the constructed segment comprises first and second sequence numbers in its header portion.

40. An apparatus according to Claim 39, wherein the header portion of the segment format further comprises an Urgent Pointer field, and wherein the first and second segment transmission sequence numbers are included in the Urgent Pointer field of the header portion of the constructed segment.

41. An apparatus according to Claim 29, wherein the circuit is operative to transmit the segment in one of a wireless communications medium, a wireline communications medium, and an optical communications medium.

42. An apparatus, comprising:

a circuit configured to receive a segment conforming to a segment format comprising a data portion and a header portion comprising a field for a sequence number associated with data in the data portion, the header portion of the received segment including a segment transmission sequence number and to responsively construct an acknowledgment reflecting the segment transmission sequence number of the received segment.

43. An apparatus according to Claim 42, wherein, according to the segment format, the field for a sequence number associated with data in the data portion comprises a field for a sequence number of a data byte in the data portion.

44. An apparatus according to Claim 42, wherein the header portion of the segment format further comprises an Urgent Pointer field, and wherein the Urgent Pointer field of the header portion of the received segment includes the segment transmission sequence number.

45. An apparatus according to Claim 42, wherein the circuit is operative to receive the segment from one of a wireless communications medium, a wireline communications medium and an optical communication medium and to transmit the acknowledgment in the one of the wireless communications medium, the wireline communications medium and the optical communications medium.

46. A computer program product for creating data structures for transmission in a communications system, the computer program product comprising computer-readable program code embodied in a computer-readable storage medium, the computer-readable program code comprising:

program code for constructing a segment conforming to a segment format comprising a data portion and a header portion comprising a field for a sequence number associated with data in the data portion, wherein the header portion of the segment includes a segment transmission sequence number.

47. A computer program product according to Claim 46, wherein, according to the segment format, the field for a sequence number associated with data in the data portion comprises a field for a sequence number of a data byte in the data portion.

48. A computer program product according to Claim 46, wherein the header portion of the segment format further comprises an Urgent Pointer field, and wherein the Urgent Pointer field of the header portion of the transmitted segment includes the segment transmission sequence number.

49. A computer program product according to Claim 48, wherein the computer-readable program code further comprises program code for including the segment transmission sequence number in the Urgent Pointer field of the header of the segment responsive to an absence of urgent data in the data portion of the segment.

50. A computer program product according to Claim 46:

wherein the program code for constructing a segment comprises program code for constructing a first segment conforming to the segment format and comprising a segment transmission sequence number in a predefined field of its header portion; and

wherein the computer-readable program code further comprises program code for constructing a second segment conforming to the segment format and comprising information other than a segment transmission sequence number in the predefined field of its header portion.

51. A computer program product according to Claim 46, wherein the computer-readable program code further comprises:

program code for determining a time of transmission for the constructed segment;

program code for determining a reception time of an acknowledgment of the constructed segment; and

program code for determining a round trip time based on the determined transmission and reception times.

52. A computer program product according to Claim 51, wherein the computer-readable program code further comprises program code for adjusting a retransmission timing based on the determined round trip time.

53. A computer program product according to Claim 46, wherein the computer-readable program code comprises:

program code for receiving a first segment, the first segment conforming to the segment format and comprising a segment transmission sequence number in a predefined field of its header portion;

program code for receiving a second segment, the second segment conforming to the segment format and comprising information other than a segment transmission sequence number in the predefined field of its header portion;

program code for determining a round trip time according to a first procedure responsive to receipt of the first segment; and

program code for determining a round trip time according to a second procedure responsive to the receipt of the second segment.

54. A computer program product for processing data structures in a communications system, the computer program product comprising computer-readable program code embodied in a computer-readable storage medium, the computer-readable program code comprising:

program code for receiving a segment conforming to a segment format comprising a data portion and a header portion comprising a field for a sequence number associated with data in the data portion, wherein the header portion of the received segment includes a segment transmission sequence number; and

program code for constructing an acknowledgment that reflects the segment transmission sequence number.

55. A computer program product according to Claim 54, wherein, according to the segment format, the field for a sequence number associated with data in the data portion comprises a field for a sequence number of a data byte in the data portion.

56. A computer program product according to Claim 54, wherein the header portion of the segment format further comprises an Urgent Pointer field, and wherein the Urgent Pointer field of the header portion of the received segment includes the segment transmission sequence number.

57. A computer program product according to Claim 54, wherein the acknowledgment comprises a segment including first and second segment transmission sequence numbers in its header portion.